

Meeting Minutes Transmittal/Approval
Unit Managers' Meeting
200 Area Groundwater and Source Operable Units
1200 Jadwin Avenue, Richland, Washington
March 17, 2005


APPROVAL:


Larry Romine, 200 Area Unit Manager, DOE/RL

Date:

4-14-05


APPROVAL:


Arlene Tortoso, 200 Area Assistant Manager, DOE/RL

Date:

4/13/05

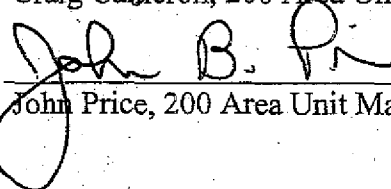
APPROVAL:


Craig Cameron, 200 Area Unit Manager, EPA

Date:

4/7/05

APPROVAL:


John Price, 200 Area Unit Manager, Ecology

Date:

4/4/05

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**DISTRIBUTION
UNIT MANAGERS' MEETING,
200 AREA GROUNDWATER SOURCE OPERABLE UNITS**

DOE/RL

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| Steve Bertness | A6-39 |
| Bryan Foley | A6-38 |
| Larry Romine | RMIS |
| Arlene Tortoso | RMIS |

EPA

| | |
|---------------|-------|
| Craig Cameron | B1-46 |
|---------------|-------|

Ecology

| | |
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| Brenda Jentzen | RMIS |
| Tina Masterson-Heggen | H0-57 |
| John Price | H0-57 |
| Jennie Stults | H0-57 |
| Jean Vanni | H0-57 |

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| Lanny Dusek | RMIS |
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| Mary Todd-Robertson | E6-35 |

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| Curt Wittreich | RMIS |
|----------------|------|

PNNL

| | |
|-----------------|-------|
| Stuart Luttrell | K6-96 |
|-----------------|-------|

| | |
|---------------------------|-------|
| Administrative Record (2) | A3-01 |
|---------------------------|-------|

| | |
|------------|-------|
| Debbi Isom | H6-08 |
|------------|-------|

Please inform Dee Goodson – FH (373-4456)
of deletions or additions to the distribution list.

UNIT MANAGERS' STATUS MEETING MINUTES
1200 Jadwin/Rm 1-C1
March 17, 2005

Meeting Minutes are attached. Minutes are comprised of the following:

| | |
|--------------|--|
| Attachment 1 | Attendance Record |
| Attachment 2 | Agenda |
| Attachment 3 | Groundwater Operable Units Minutes |
| Attachment 4 | Groundwater Status |
| Attachment 5 | Discussion on Document Approval and Point of Contact List |
| Attachment 6 | 200-PW-1 Soil Vapor Extraction Sites |
| Attachment 7 | Approval of Soil Vapor Extraction System Operating Plan |
| Attachment 8 | Technetium-99 Summary at WMA T |
| Attachment 9 | Action Item List |

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UNIT MANAGERS' MEETING AGENDA

1200 Jadwin/Rm 1-C1

March 17, 2005

GROUNDWATER OPERABLE UNITS STATUS (8:30-9:15)

SOURCE OPERABLE UNITS STATUS (Canceled)

ISSUE RESOLUTION MEETING (Canceled)

- (See Issues List)

General

- Outstanding Action Items
- Open for Regulatory Topics or Action Items
- Risk Assessment Configuration Management Board Update

UNIT MANAGERS' STATUS MEETING MINUTES GROUNDWATER OPERABLE UNITS

1200 Jadwin/Rm 1-C1

March 17, 2005

GROUNDWATER OPERABLE UNITS STATUS (8:30-10:30)

- Discussion on Document Approval and Ecology Point of Contact List
 - Approvals for documents discussing intrusive activities in the 200-ZP-1 operable unit required EPA signature, at a minimum. Depending on where the activities are located, Ecology's signature may be required. If it is a 200-PO-1 or 200-UP-1 activity, only an Ecology signature is required. The Point of Contact List for Ecology (Attachment 5) will assist document preparers on whom to seek for information.
 - Discussion on the process for review of documents will occur at another meeting.

200-BP-5 & 200-PO-1 OUs

- 200-BP-5 Sampling and Analysis Plan status
 - 200-BP-5 SAP is approved.
- 200-PO-1 Sampling and Analysis Plan status
 - SAP will be sent to RL on 3/17 and RL will forward to Ecology.
- Revised Tables in 200-PO-1 Waste Control Plans
 - Ecology action of updated 200-PO-1 and Waste Control Plan Tables

200-UP-1 OU (Attachment (4))

- Remediation Treatment Status
- RI/FS Work Plan Status – Incorporating Ecology comments
- Update on Rebound Study

200-ZP-1 OU (Attachment (4))

- Remediation Treatment Status
- Update on Expanding P&T System to North
- Update on Contained-In for 5 Current Extraction Wells

200-PW-1, 200-ZP-2 OU

- Remediation Treatment Status – The soil vapor extraction operating plan was prepared to support restart of operations in April 2005. The plan has been approved by DOE-RL and EPA. Use of well 299-W15-8 for vapor extraction was included in the plan. (Attachment (7))

- Monthly Monitoring – Monthly carbon tetrachloride soil vapor monitoring was conducted in February 2005 (Carbon Tetrachloride Rebound Concentrations are attached). The results were consistent with monitoring results from previous months. (Attachment (6))

SOURCE OPERABLE UNITS STATUS (Canceled)

ISSUE RESOLUTION MEETING (Canceled)

200 Area UMM – March 2005

200-UP-1:

- The Rebound Study started January 26.
- The first three rounds of groundwater sampling were successfully implemented February 2, 9, and 23 (Attachments 1 and 2). Wells 299-W19-36 and 299-W19-43 were also sampled March 9 since these wells are showing increasing Tc-99 and/or uranium concentrations.
- The re-analysis of February 23 sampling was due last night. I will have to report this data later today.
- RI/FS Work Plan – Once Ecology provides the revised location for new well UP10, all document revisions will be complete.

200-ZP-1:

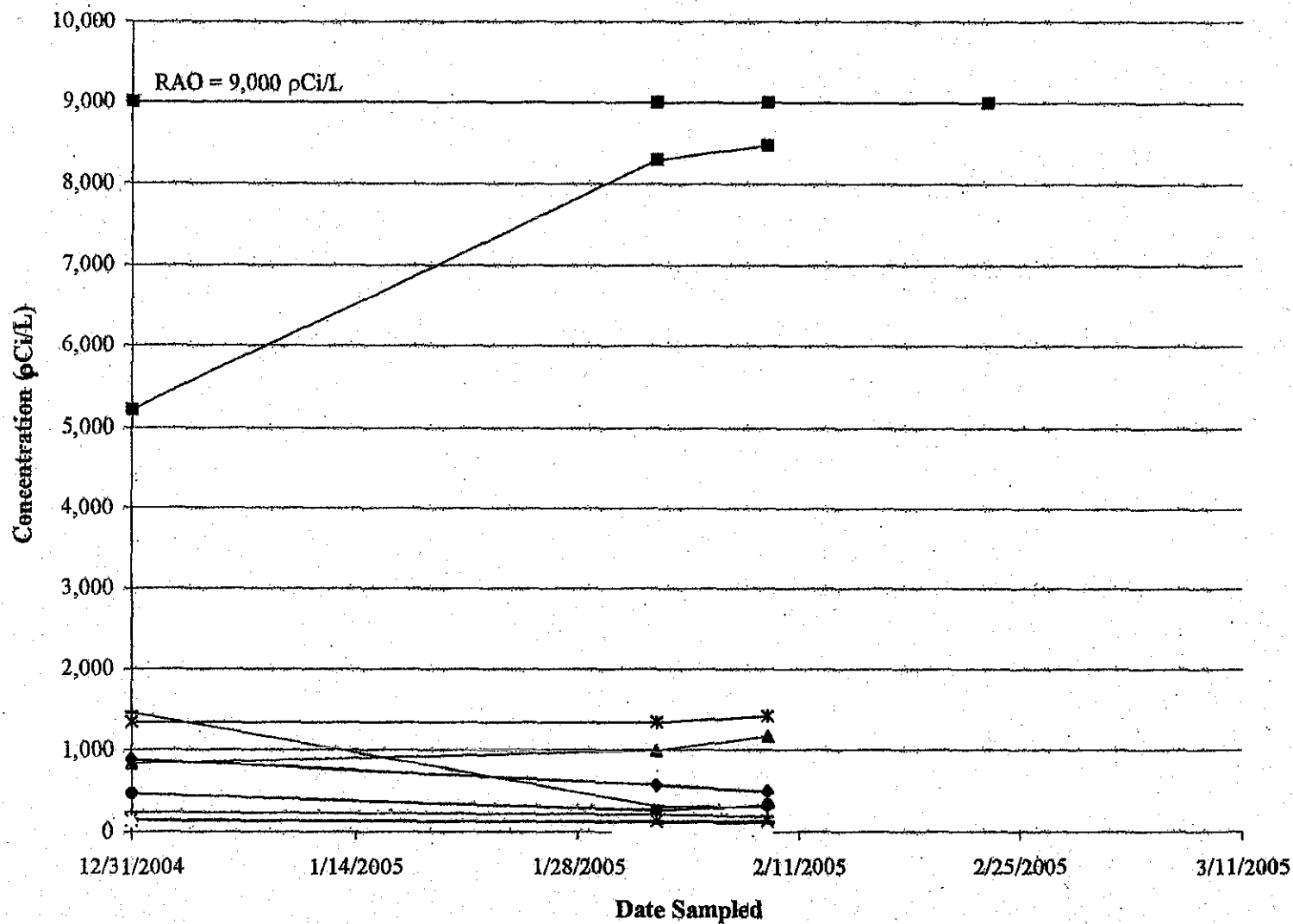
- Average Pumping Rate for January 31 through March 13, 2005: 183 gpm
- The starter was recently replaced in extraction well #5 earlier this week, now the motor has given out. The motor will be replaced early next week.
- From January 31 through March 13, 2005 the system operated between 177 and 199 gpm (Attachment 3).
- System Run Time

| | |
|-----------------------------------|-------|
| ➤ For January 31 through March 13 | 82.9% |
| ➤ FY2004 (Year to date) | 90.2% |
| ➤ System Inception to date | 92.5% |
- Design work for the ZP-1 pump-and-treat expansion is just now finishing up. Construction well start later this month. We are on-schedule for a July 31 startup date.
- John Winterhalder will discuss the status of "Contained-In" determination to remove the need for ZP-1 leak detection.
- Vista Engineering's DNAPL investigation is close to on schedule. Groundwater sampling done. Soil-gas done except for TX Tank Farm. Geophysical surveys will start March 21 (if all goes smoothly will not impact April 1 SVE startup). CPT pushes will start March 28 (3 weeks in length) – includes push-pull testing.
- New wells "H" (by T Plant) and "T" (2/3 mile north of T Plant) will begin being drilling in the next month. (Attachments 4).
- PNNL will present depth-discrete groundwater data from new T Farm detection well "T1" (299-W11-25) (Attachment 5).
- RI/FS Schedule:
 - RI Report preparation is scheduled to begin October 1, 2005
 - Feasibility Study/Proposed Plan is scheduled to begin October 1, 2006

200-PW-1 (200-ZP-2):

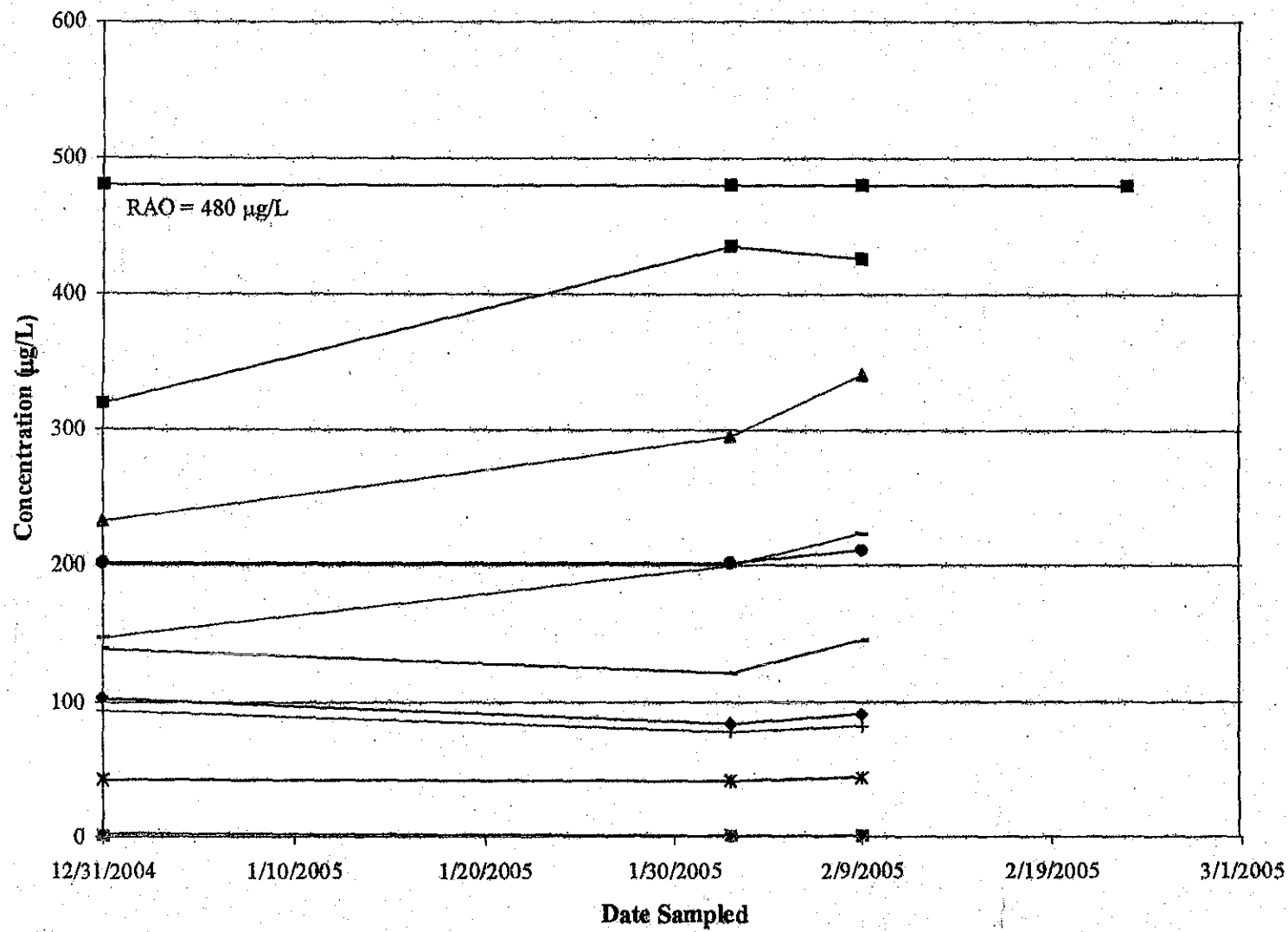
- Active system will be starting up first week of April.
 - Well 299-W15-8 (Attachment 6) will be fitted for SVE hookup by middle of April 2005.
 - Need signatures on 2005 SVE Operating Plan.
- The passive system remains operational

Technetium-99 (pCi/L)



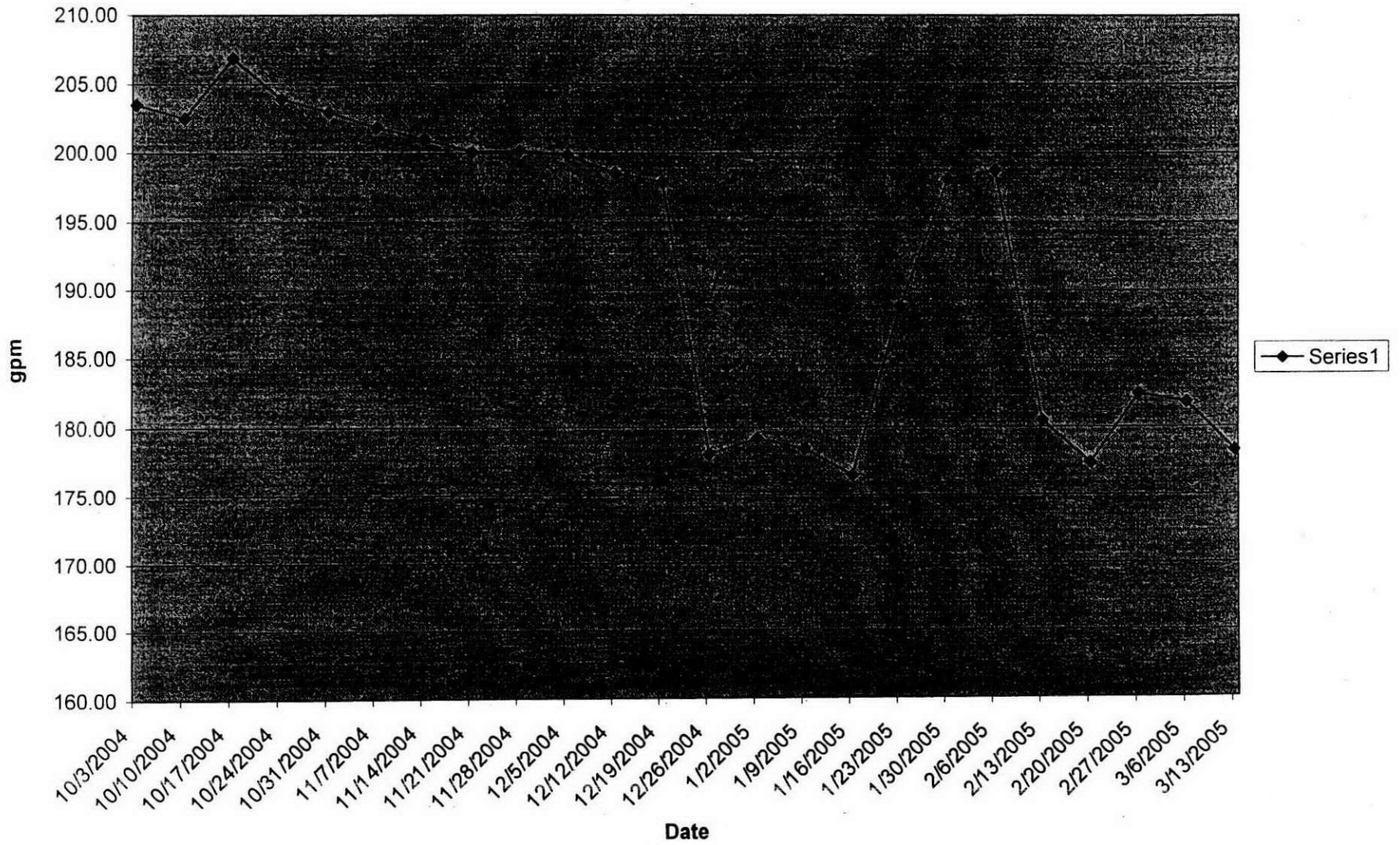
Attachment 1

Uranium Concentrations



Attachment 2

200-ZP-1 Average Pumping Rate for FY2005

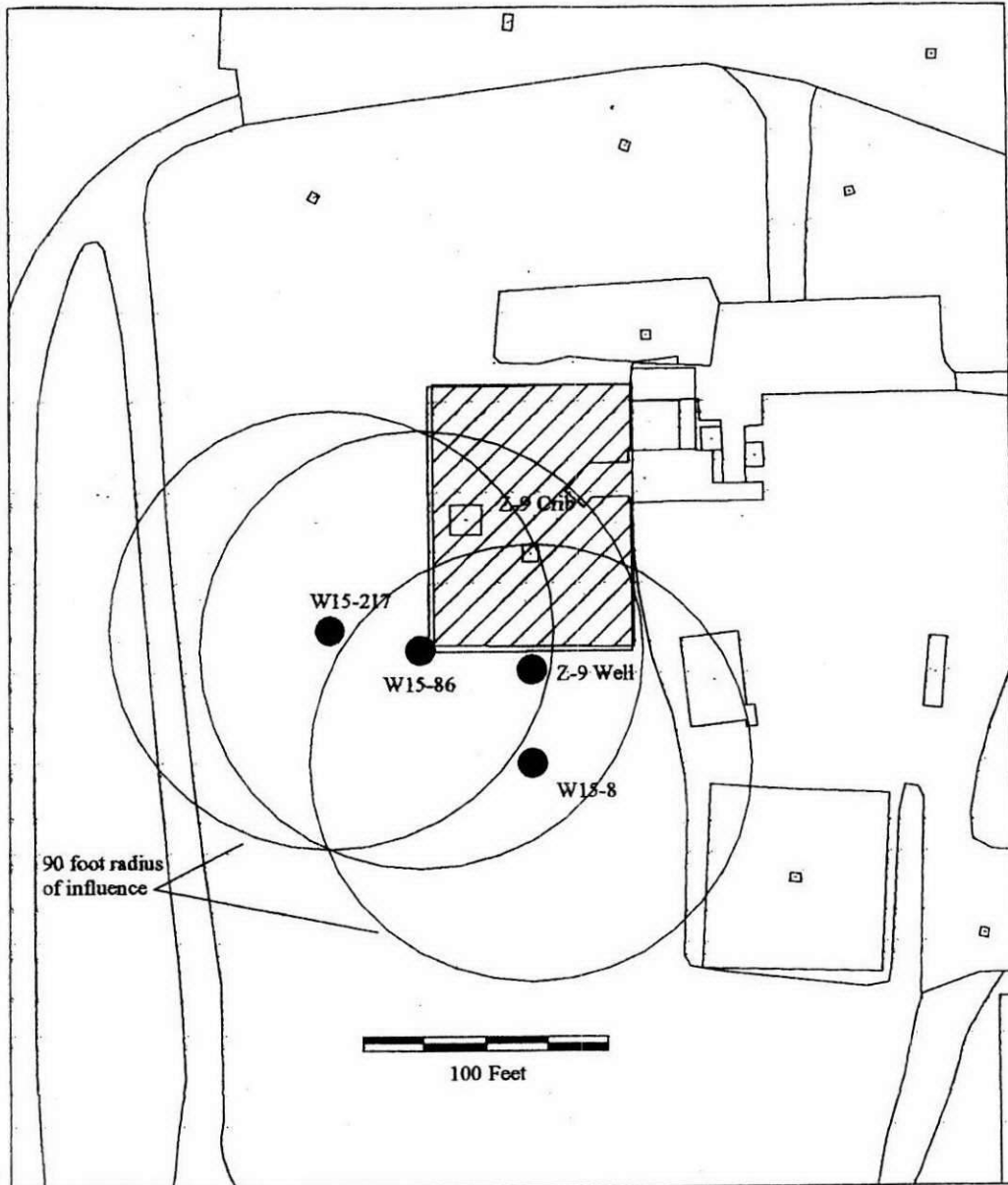


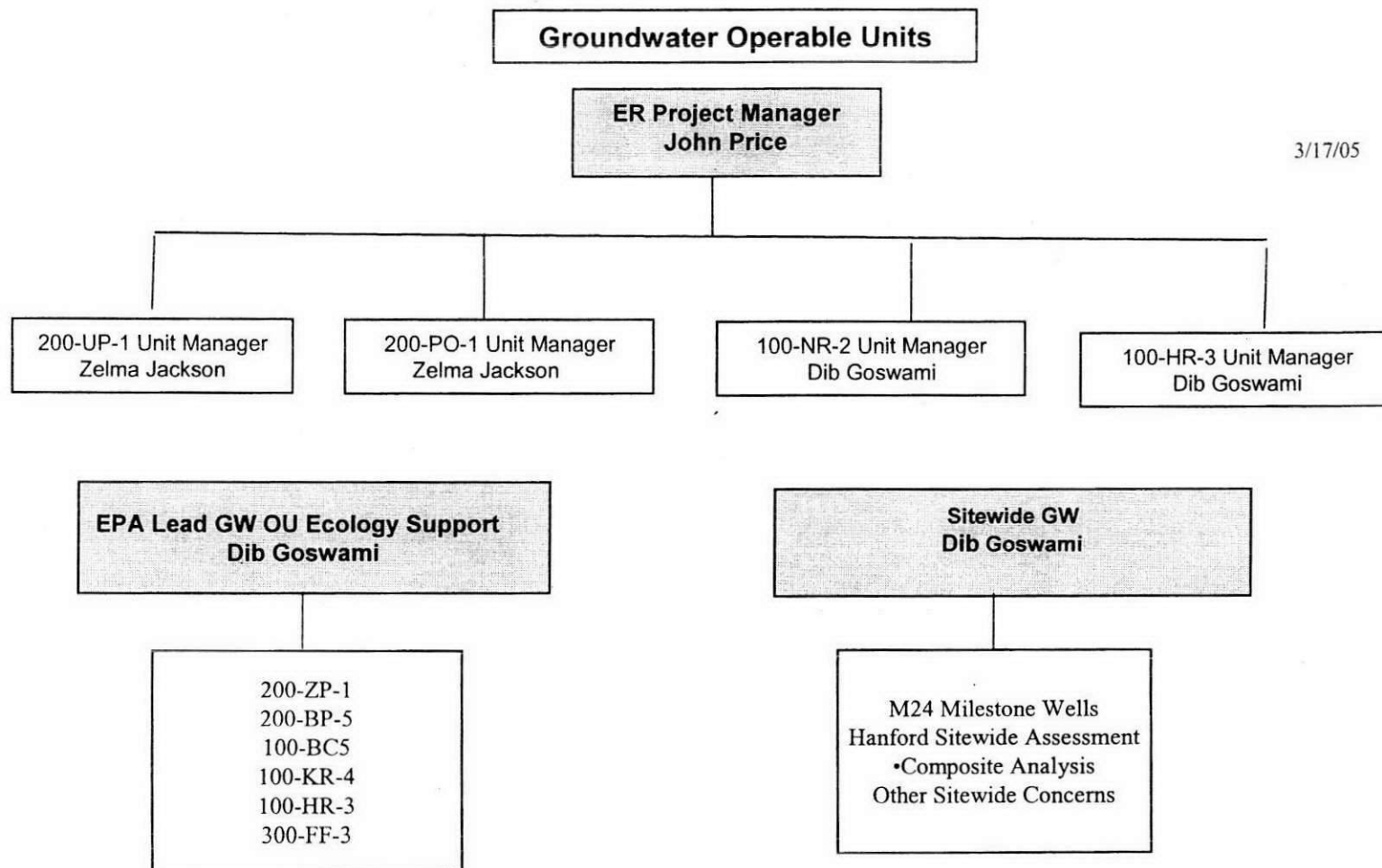
Attachment 3

Attachment 4

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Attachment 6





Comparison of Maximum Carbon Tetrachloride Rebound Concentrations
Monitored at 200-PW-1 Soil Vapor Extraction Sites
FY 1999 - FY 2005

| 200-PW-1 (200-ZP-2) | | July 1998 - June 2001 | | July 2001 - June 2002 | | July 2002 - September 2003 | | July 2002 (Z-9) or October 2003 (Z-1A) - March 2004 | | July 2002 (Z-9) or April 2004 (Z-1A) - September 2004 | | October 2004 - February 2005 | |
|---|------|---|--------------------------|---|--------------------------|---|--------------------------|---|--------------------------|---|--------------------------|---|--------------------------|
| Location (Well or Probe) feet/bgs | Site | Maximum Rebound Carbon Tetrachloride (ppmv) | months* of rebound | Maximum Rebound Carbon Tetrachloride (ppmv) | months* of rebound | Maximum Rebound Carbon Tetrachloride (ppmv) | months* of rebound | Maximum Rebound Carbon Tetrachloride (ppmv) | months* of rebound | Maximum Rebound Carbon Tetrachloride (ppmv) | months* of rebound | Maximum Rebound Carbon Tetrachloride (ppmv) | months* of rebound |
| 79-03/ 5 ft | Z-18 | | | | | | | | | | | | |
| 79-06/ 5 ft | Z-1A | | | | | | | | | | | | |
| 79-11/ 5 ft | Z-1A | | | | | | | | | | | | |
| 86-05/ 5 ft | Z-9 | | | | | | | | | | | | |
| 86-05-01/ 5 ft | Z-9 | | | | | | | | | | | | |
| 86-06/ 5 ft | Z-9 | | | | | | | | | | | | |
| 87-05/ 5 ft | Z-1A | | | | | | | | | | | | |
| 87-09/ 5 ft | Z-1A | | | | | | | | | | | | |
| 94-02/ 5 ft | Z-9 | | | | | | | | | | | | |
| 95-11/ 5 ft | Z-9 | | | | | | | | | | | | |
| 95-12/ 5 ft | Z-9 | | | | | | | | | | | | |
| 95-14/ 5 ft | Z-9 | | | | | | | | | | | | |
| CPT-13A/ 9 ft | Z-1A | | | | | | | | | | | | |
| CPT-16/ 10 ft | Z-9 | | | | | | | | | | | | |
| CPT-17/ 10 ft | Z-9 | 6.6 | 24 | 3.2 | 6 | 6.6 | 15 | 9.0 | 21 | 9.9 | 27 | 7.1 | 4 |
| CPT-18/ 15 ft | Z-9 | 5.2 | 24 | 1.4 | 6 | 2.4 | 15 | 2.4 | 21 | 2.5 | 27 | 3.1 | 4 |
| CPT-4A/ 25 ft | Z-1A | 3.5 | 0 | 3.4 | 10 | | | | | | | | |
| CPT-4E/ 25 ft | Z-1A | not measured | | 2.6 | 12 | 1.3 | 0 | | | 2.4 | 0 | | |
| CPT-16/ 25 ft | Z-9 | 1.8 | 24 | 1.1 | 6 | 2 | 15 | 2.6 | 21 | 3.6 | 27 | 4.4 | 4 |
| CPT-31/25 ft | Z-1A | | | | | | | | | | | | |
| CPT-32/ 25 ft | Z-1A | 16.5 | 18 | 13.0 | 12 | 8.3 | 6 | 8 | 6 | | | 5.5 | 5 |
| CPT-30/ 28 ft | Z-18 | 1.4 | 18 | 0 | 12 | 0 | 6 | 0 | 6 | | | 1.6 | 5 |
| CPT-13A/ 30 ft | Z-1A | 3.6 | 18 | 2.6 | 12 | 1.6 | 6 | 2 | 6 | 1.9 | 0 | 7.1 | 5 |
| CPT-7A/ 32 ft | Z-1A | 6.2 | 18 | 5.6 | 12 | 3.9 | 6 | 9.5 | 6 | 1.9 | 0 | 3.9 | 5 |
| CPT-27/ 33 ft | Z-9 | 2.6 | 24 | 1.5 | 6 | 1.7 | 15 | 2.7 | 21 | 2.7 | 27 | 8.4 | 4 |
| CPT-1A/ 35 ft | Z-12 | 7.7 | 18 | 11.3 | 12 | 22.0 | 15 | 18.3 | 6 | 18.0 | 0 | 14.0 | 6 |
| CPT-28/ 40 ft | Z-9 | | | 56.5 | 6 | | | | | | | | |
| CPT-33/ 40 ft | Z-1A | | | 2.3 | 12 | | | | | | | | |
| CPT-34/ 40 ft | Z-18 | 1.9 | 0 | 2.2 | 12 | 1.6 | 0 | | | 1.8 | 0 | | |
| CPT-21A/ 45 ft | Z-9 | 127 | 24 | 133 | 6 | 90.0 | 15 | 150 | 21 | 150 | 27 | 161 | 4 |
| W15-220ST/ 52 ft | Z-9 | 2.5 | 24 | | | 1.5 | 1 | | | | | | |
| CPT-28/ 60 ft | Z-9 | | | | | | | | | | | | |
| CPT-9A/ 60 ft | Z-9 | 68 | 24 | 45.3 | 6 | 35.9 | 15 | 35.9 | 21 | 35.9 | 27 | 32.4 | 4 |
| CPT-C3872 / 61 ft | Z-1A | | | | | | | | | | | 7.6 | 5 |
| CPT-16/ 65 ft | Z-9 | not measured | | not measured | | 4.2 | 15 | | | 4.2 | 27 | 6.7 | 4 |
| CPT-1A/ 68 ft | Z-12 | not measured | | 5.5 | 12 | | | | | | | | |
| CPT-30/ 68 ft | Z-18 | | | | | | | | | | | | |
| CPT-32/ 70 ft | Z-1A | | | 7.7 | 12 | | | | | | | | |
| CPT-13A/ 70 ft | Z-1A | | | | | | | | | | | | |
| CPT-24/70 ft | Z-9 | | | | | 4.7 | 15 | | | 9.1 | 27 | | |
| W15-219SST/ 70 ft | Z-9 | 7.8 | 24 | | | 1.9 | 1 | | | 5.7 | 22 | | |
| CPT-18/ 75 ft | Z-9 | 18 | 24 | | | 4.5 | 15 | | | 8.3 | 27 | | |
| CPT-4A/ 75 ft | Z-1A | not measured | | 7.1 | 3 | | | | | | | | |
| CPT-31/ 76 ft | Z-1A | | | | | | | | | | | | |
| CPT-33/ 80 ft | Z-1A | | | | | | | | | | | | |
| W15-82/ 83 ft | Z-9 | 55 | 24 | 66.7 | 6 | 85.8 | 15 | 85.8 | 21 | 85.8 | 27 | 95.8 | 4 |
| CPT-21A/ 86 ft | Z-9 | 195 | 24 | 186 | 6 | 206 | 15 | 244 | 21 | 244 | 27 | 209 | 4 |
| CPT-34/ 86 ft | Z-18 | | | | | | | | | | | | |
| W15-95U/ 86 ft | Z-9 | 43 | 21 | | | | | | | | | | |
| W15-218SST/ 86 ft | Z-9 | | | | | 1.6 | 2 | | | | | | |
| CPT-28/ 87 ft | Z-9 | 224 | 24 | 229 | 6 | 235 | 15 | 258 | 21 | 258 | 27 | 245 | 4 |
| CPT-48/ 90 ft | Z-1A | | | 3.2 | 10 | | | | | | | | |
| CPT-1A/ 91 ft | Z-18 | | | 10.7 | 10 | | | | | | | | |
| CPT-4A/ 91 ft | Z-1A | | | 7.5 | 2 | | | | | | | | |
| CPT-9A/ 91 ft | Z-9 | | | 74.3 | 6 | | | | | | | | |
| W15-85/ 91 ft | Z-9 | 51 | 24 | | | | | | | | | | |
| W18-252SST/ 100 | Z-1A | | | | | | | | | | | | |
| W18-152/ 101 ft | Z-12 | 25 | 18 | 25.7 | 12 | 20.7 | 6 | 12.4 | 6 | | | 14.6 | 5 |
| CPT-4E/ 103 ft | Z-1A | not measured | | 16.1 | 12 | | | | | | | | |
| W18-167/ 105 ft | Z-1A | 248 | 18 | 297 | 12 | 243 | 6 | 266 | 6 | | | 37.4 | 5 |
| W18-165/ 109 ft | Z-1A | not measured | | 278 | 12 | 328 | 6 | 205 | 6 | | | 35.2 | 5 |
| W15-217/ 114 ft | Z-9 | 442 | 24 | 93.6 | 6 | 444 | 15 | 458 | 21 | | | 39.6 | 4 |
| CPT-24/ 118 ft | Z-9 | 35 | 24 | | | 27.8 | 15 | | | 15.3 | 27 | | |
| W15-220SST/ 118 | Z-9 | 34 | 24 | | | 27.5 | 3 | | | 26.0 | 27 | | |
| W18-158L/ 120 ft | Z-1A | 284 | 18 | 163 | 3 | | | | | | | | |
| W15-218SST/ 130 | Z-9 | 54 | 24 | | | 23.1 | 1 | | | 0 | 22 | | |
| W18-249/ 130 ft | Z-18 | 176 | 18 | 196 | 12 | 46.3 | 6 | 41.0 | 6 | | | 52.2 | 5 |
| W18-248/ 131 ft | Z-1A | 214 | 18 | 306 | 12 | 182 | 6 | 180 | 6 | | | 70.5 | 5 |
| W15-95L/ 144 ft | Z-9 | not measured | | 31.8 | 6 | 25.1 | 15 | 40.3 | 21 | | | 26.7 | 4 |
| W15-219SST/ 155 | Z-9 | 44 | 24 | | | 6.8 | 1 | | | 9.5 | 22 | | |
| W15-220L/ 163 ft | Z-9 | | | | | --- | 15 | | | 8 | 27 | | |
| W15-219L/ 175 ft | Z-9 | | | | | --- | 15 | | | 23 | 27 | | |
| W15-9L/ 176 ft | Z-9 | 20 | 21 | 16.9 | 6 | 13.1 | 15 | 13.1 | 21 | 13.1 | 27 | 2.1 | 4 |
| W15-84L/ 180 ft | Z-9 | not measured | | not measured | | 25.9 | 15 | 25.9 | 21 | 25.9 | 27 | 22.0 | 4 |
| W15-6L/ 182 ft | Z-9 | | | | | | | | | | | | |
| W15-220SST/ 185 | Z-9 | 15 | 24 | | | --- | 1 | | | | | | |
| W18-7/ 197 ft | Z-1A | | | | | | | | | | | | |
| W18-12/ 196 ft | Z-18 | | | | | | | | | | | | |
| W18-6L/ 208 ft | Z-1A | | | | | | | | | | | | |
| * - based on location (Z-1A/18/12 or Z-9) of monitoring point; specific points may be beyond SVE zone of influence during particular operating configurations | | | | | | | | | | | | | |
| - Z-13 and Z-12 wells off-line Oct 96 - Apr 98 | | | | | | | | | | | | | |
| - CPT-1A, CPT-9A, and possibly CPT-7A appeared to be beyond SVE zone of influence in Oct 96 based on differential pressure (BHI-01105, p. 6-1) | | | | | | | | | | | | | |
| - CPT-9A, CPT-21A, CPT-28 beyond SVE zone of influence in May 96 based on CCM concentrations and airflow modeling based on measured vacuums (BHI-01105, p. 6-1) | | | | | | | | | | | | | |

Carbon Tetrachloride Rebound Concentrations
Monitored at 200-PW-1 Soil Vapor Extraction Sites
October 2003 - February 2005

| 200-PW-1 (200-ZP-2) | | 10/31/2003 | 12/04/2003 | 12/22/2003 | 01/20/2004 | 02/19/2004 | 03/16/2004 | 03/24/2004 | 04/29/2004 | 05/05/2004 | 06/03/2004 | 06/24/2004 | 07/15/2004 | 07/23/2004 | 08/28/2004 | 10/07/2004 | 11/17/2004 | 12/28/2004 | 01/19/2005 | 02/24/2005 |
|-----------------------------|------|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Location (Well or Probe) | Site | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) | CCl4 (ppmv) |
| feet bgs | | | | | | | | | | | | | | | | | | | | |
| CPT-17/ 10 ft | Z-9 | 3.2 | 4.1 | 2.7 | 5.8 | 5.0 | --- | (c) | 9.0 | 7.0 | | 8.8 | 9.0 | 7.4 | 6.7 | 6.8 | 5.5 | 5.3 | 6.4 | 7.1 |
| CPT-18/ 15 ft | Z-9 | 0 | 1.1 | 1.0 | 1.5 | 1.4 | --- | (c) | 1.6 | 1.2 | | 2.5 | 2.5 | --- | (e) | 0 | 0 | 1.5 | 3.1 | |
| CPT-4E/ 25 ft | Z-1A | | | | | | | | | 1.7 | | 1.4 | 2.0 | 2.4 | | 0 | 0 | | | |
| CPT-16/ 25 ft | Z-9 | 2.6 | 1.2 | 1.4 | 0 | 1.7 | 2.2 | | 1.8 | | | 1.4 | 3.6 | --- | (e) | 1.3 | 1.2 | 1.1 | 4.4 | 2.3 |
| CPT-32/ 25 ft | Z-1A | 0 | 0 | 0 | 2.4 | 5.1 | 5.9 | | | | | | | | | | 0 | 1.7 | 2.7 | 5.5 |
| CPT-30/ 28 ft | Z-1A | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | 0 | 1.3 | 1.5 | 1.6 |
| CPT-13A/ 30 ft | Z-1A | 0 | 0 | 0 | 0 | 0 | 1.8 | | 1.4 | | | 1.5 | 1.8 | 1.9 | | 0 | 0 | 3.0 | 0 | 7.1 |
| CPT-7A/ 32 ft | Z-1A | 2.4 | 3.0 | 2.7 | 4.3 | 3.0 | 9.5 | | 1.9 | 1.7 | | 1.9 | 1.7 | 1.8 | | 1.21 (f) | 1.5 | 1.5 | 2.2 | 3.8 |
| CPT-27/ 33 ft | Z-9 | 1.1 | 0 | 1.1 | 1.5 | 2.0 | 2.7 | | 2.5 | | | 1.4 | 2.2 | 1.2 | | 0 | 0 | 1.3 | 8.4 | 2.2 |
| CPT-1A/ 35 ft | Z-12 | 18.3 | 6.5 | 13.1 | 10.8 | 6.0 | 9.0 | | 4.2 | | | 10.7 | 9.0 | 5.2 | | 18.0 | 3.2 | 4.7 | 14.0 | 13.2 |
| CPT-34/ 40 ft | Z-18 | | | | | | | | 1.4 | | | 1.1 | 1.0 | 0 | | 1.6 | 1.6 | | | |
| CPT-21A/ 45 ft | Z-9 | 52.3 | 89.1 | 68.5 | 59.2 | 71.8 | --- | (c) | 150 | 59.2 | | 136 | 81.9 | 34.0 | | 92.5 | 86.7 | 79.9 | 146 | 143 |
| CPT-9A/ 50 ft | Z-9 | | | | | | | | | | | | | | | | 45.8 (h) | 39.4 | 48.4 | 46.4 |
| CPT-9A/ 60 ft | Z-9 | 25.9 | 33.1 | 30.8 | 24.3 | 33.8 | 27.1 | | 25.7 | | | 28.3 | 26.0 | 24.8 | | --- | (g) | 26.7 (h) | 32.4 | 27.5 |
| CPT-C3872 / 61 ft | Z-1A | | | | | | | | | | | | | | | | | 1.1 | 4.4 | 5.9 |
| CPT-9A/ 64 ft | Z-9 | | | | | | | | | | | | | | | | 0 (h) | 20.1 | 2.8 | 19.8 |
| CPT-16/ 65 ft | Z-9 | | | | | | | | 3.1 | | | 4.0 | 1.5 | --- | (e) | 4.2 | 2.9 | 2.7 | 3.5 | 4.9 |
| CPT-24/ 70 ft | Z-9 | | | | | | | | 4.4 | | | 4.4 | 9.1 | 5.0 | | 4.2 | 4.6 | | | |
| W15-219SST/ 70 ft | Z-9 | | | | | | | | 5.7 | | | | | | | | | | | |
| CPT-18/ 75 ft | Z-9 | | | | | | | | 8.0 | | | 6.2 | 4.7 | --- | (e) | 6.3 | 8.3 | 0 | | |
| W15-82/ 83 ft | Z-9 | 24.0 | 34.4 | 43.1 | 47.5 | 45.9 | 50.5 | | 83.1 | | | 0 | 85.4 | 81.3 | | 71.2 | 7.9 | --- | (i) | 95.8 |
| CPT-21A/ 86 ft | Z-9 | 91.8 | 183 | 171 | 244 | 98.1 | --- | (c) | 212 | 73.3 | | 177 | 157 | 95.7 | | 40.5 | 80.5 | 179 | 184 | 191 |
| CPT-28/ 87 ft | Z-9 | 155 | 208 | 140 | 58.7 | 98.1 | --- | (c) | 258 | 26.8 | | 222 | 164 | 227 | | 222 | 218 | 231 | 223 | 245 |
| W18-162/ 101 ft | Z-12 | 5.7 | 10.5 | 11.3 | 10.5 | 12.4 | 12.1 | | | | | | | | | | | 10.4 | 12.3 | 14.6 |
| W18-167/ 108 ft | Z-1A | 201 | 223 | 201 | 286 | 201 | --- | (b) | | | | | | | | | | --- | (i) | 37.4 |
| W18-185/ 109 ft | Z-1A | 94.2 | 205 | 193 | 188 | 196 | 94.8 | | | | | | | | | | | --- | (i) | 35.2 |
| W15-217/ 114 ft | Z-9 | 53.8 | 80.4 | 66.4 | 82.5 | 62.0 | --- | (c) | 458 | 256 | | 377 | 257 | 467 | | 63.1 | 264 | --- | (i) | 39.6 |
| CPT-24/ 118 ft | Z-9 | | | | | | | | 5.3 | | | 15.3 | 8.5 | 6.9 | | 2.8 | 8.5 | | | |
| W15-220SST/ 118 ft | Z-9 | | | | | | | | 28.0 | | | 18.7 | 18.5 | 15.7 | | 9.0 | 0 | | | |
| W18-249/ 130 ft | Z-18 | 8.0 | 31.1 | 21.4 | 19.8 | 22.1 | 41.0 | | | | | | | | | | | --- | (i) | 51.5 |
| W15-219SST/ 130 ft | Z-9 | | | | | | | | 0 | | | | | | | | | --- | (i) | 70.5 |
| W18-248/ 131 ft | Z-1A | 78.6 | 80.4 | 85.6 | 90.9 | 166 | 180 | | 35.0 | | | 22.0 | 28.1 | --- | (e) | 18.6 | 22.7 | 18.5 | --- | (i) |
| W15-85L/ 144 ft | Z-9 | 19.2 | 20.3 | --- | (a) | 40.3 | 23.0 | | | | | | | | | | | --- | (i) | 26.7 |
| W15-219SST/ 155 ft | Z-9 | | | | | | | | 9.5 | | | | | | | | | | | |
| W15-220L/ 163 ft | Z-9 | | | | | | | | 7.5 | | | 6.4 | 0 | 0 | | 5.7 | 0 | | | |
| W15-219L/ 175 ft | Z-9 | | | | | | | | --- | (d) | 23.0 | 2.9 | 0 | --- | (e) | 0 | 0 | 0 | | |
| W15-9L/ 176 ft | Z-9 | 6.1 | 5.8 | --- | (a) | 9.1 | 9.6 | | 8.8 | | | 10.1 | 11.9 | --- | (e) | 10.9 | 9.0 | 6.6 | --- | (i) |
| W15-84L/ 180 ft | Z-9 | 4.7 | 4.9 | 4.9 | 10.7 | 18.5 | --- | (c) | 18.5 | 15.6 | | 16.4 | 20.9 | 18.1 | | 17.7 | 10.7 | 22.0 | 18.0 | 22.0 |
| | | (a) Unable to access because of drilling operations | | | | | | | | | | | | | | | | | | |
| | | (b) Unable to sample; tubing will be repaired. | | | | | | | | | | | | | | | | | | |
| | | (c) anomalously low due to pump problems; resampled on 3/24/04 | | | | | | | | | | | | | | | | | | |
| | | (d) unable to install sample tubing; sampled W15-219SST/70 ft, W15-219SST/130 ft, and W15-219SST/155 ft instead | | | | | | | | | | | | | | | | | | |
| | | (e) Unable to access | | | | | | | | | | | | | | | | | | |
| | | (f) condensate in tubing | | | | | | | | | | | | | | | | | | |
| | | (g) Unable to access; aboveground tubing damaged by construction vehicle. | | | | | | | | | | | | | | | | | | |
| | | (h) Depths to probes measured through existing tubing. 60 ft deep probe confirmed and sampled. | | | | | | | | | | | | | | | | | | |
| | | The other two depths measured (50 ft and 64 ft) could not be correlated to original depths (70 and 91 ft); these two probes were sampled also. | | | | | | | | | | | | | | | | | | |
| | | (i) Unable to sample; tubing will be installed | | | | | | | | | | | | | | | | | | |

APPROVAL OF THE CARBON TETRACHLORIDE EXPEDITED RESPONSE ACTION
SOIL VAPOR EXTRACTION SYSTEM OPERATING PLAN FOR FY 2005

The Unit Managers for the Carbon Tetrachloride Expedited Response Action (200-PW-1 Operable Unit) approve the attached FY 2005 Soil Vapor Extraction System Operating Plan.

A.C. Tortoso 3/17/05 D. A. Faulk 3-17-05

A. C. Tortoso
U.S. Department of Energy
Richland Operations Office

Date D. A. Faulk Date
U.S. Environmental Protection Agency
Region 10, Hanford Office

FY 2005 SOIL VAPOR EXTRACTION SYSTEM OPERATING PLAN FOR THE
CARBON TETRACHLORIDE EXPEDITED RESPONSE ACTION
(200-PW-1 OPERABLE UNIT)

Soil vapor extraction will be used at the 200-PW-1 Operable Unit (OU) during FY 2005 to remove carbon tetrachloride from the vadose zone. The primary objectives for this remediation are protection of the groundwater and mass removal. Only the 14.2 m³/min soil vapor extraction (SVE) system will be operated. Two sites will be remediated using SVE: the 216-Z-9 (Z-9) site and the 216-Z-1A/Z-18/Z-12 (Z-1A) site. Specific on-line wells have been selected prior to start-up at each site based on vapor monitoring, previous concentration trends, and location. These site-specific plans are included in this operating plan for approval by the Unit Managers prior to implementation. Based on characterization data collected at on-line wells during operation, the mix of on-line wells may be reconfigured during operations to optimize removal. These adjustments to the mix of on-line wells will not be submitted to the Unit Managers for approval prior to implementation but will be reported at Unit Manager Meetings. Ongoing passive soil vapor extraction will be maintained at Z-1A wells.

Soil vapor monitoring will be conducted at vadose zone locations near the groundwater, the Cold Creek unit (formerly called the Plio-Pleistocene layer), and the ground surface at the Z-1A and Z-9 sites while they are not being actively remediated using SVE. The soil vapor monitoring plan for both sites from April 2005 through September 2005 is included with this operating plan for approval prior to implementation. Monitoring results will be reported at the Unit Manager Meetings. If carbon tetrachloride vapor concentrations increase such that the carbon tetrachloride contamination may impact human health or the environment (including groundwater), the Unit Managers will decide on the appropriate response to mitigate the problem (e.g., relocating the vapor extraction system to address the problem).

The anticipated schedule for SVE operations and soil vapor monitoring is:

| | |
|-----------------------------------|--|
| April 2005 through June 2005: | Operate the SVE system at the Z-9 site Monitor soil vapor concentrations at the Z-1A site |
| July 2005 through September 2005: | Operate the SVE system at the Z-1A site Monitor soil vapor concentrations at the Z-9 site |

Vista Engineering Technologies, L.L.C. (VET) is planning to conduct vadose zone investigations at the Z-9 site in March 2005. The cross-well seismic investigation will involve use of vapor extraction wells. VET plans to have these investigations completed before April 2005 in support of the start of vapor extraction operations at Z-9. The Unit Managers agree that soil vapor extraction operations may be initiated a few days after April 1 in the event that VET needs a few extra days to complete their investigation.

SOIL VAPOR EXTRACTION SYSTEM OPERATING PLAN AT THE
216-Z-9 SITE
April 2005 – June 2005

Twenty-three wells at the 216-Z-9 site (Z-9 site) are identified for potential vapor extraction (Table 1). Well 299-W15-8 will be used for vapor extraction in lieu of new well 299-W15-46 (C3426), which is being completed as a groundwater well. Selected wells will be prepared for potential hook-up to the soil vapor extraction system during April through June 2005.

The last non-operational soil vapor monitoring at Z-9 prior to SVE restart will take place in mid to late March 2005. At that time, any sampling tubes will be removed from potential on-line wells. The current wellhead assemblies (configured for non-operational soil vapor monitoring) will not be disturbed until the monitoring has been completed and the tubing removed.

For initial start-up operations at Z-9, extraction will be implemented at four planned intervals: 299-W15-217, 299-W15-82, 299-W15-9U, and 299-W15-9L (Table 1) (Figure 1). Start-up operations at Z-9 in FY 1998, FY 1999, FY 2001, FY 2002, and FY 2004 were also initiated using these four extraction intervals. Selecting the same set of initial wells will allow the rebound in FY 2005 to be compared to the rebound in previous years. (The SVE system was not operated at the Z-9 site during FY2003 to avoid interfering with the characterization sampling to be conducted during drilling of well 299-W15-46.) (Note: The selection of initial on-line wells may need to be modified to accommodate the cross-well seismic test being conducted at Z-9 by Vista Engineering Technologies. However, every attempt will be made to use wells 299-W15-217, 299-W15-82, 299-W15-9U, and 299-W15-9L, as planned.)

These four intervals will be characterized on the first day they are placed into operation. During continued operations, all on-line wells will be characterized each week and all off-line wells, if requested, will be characterized during the 2nd, 4th, 6th, 8th, 10th, and final weeks, according to the attached sampling and analysis plan (Table 2). The mix of on-line wells will be periodically changed during operations, based on changing concentrations, extraction interval locations, and operating experience. In general, the initial extraction wells will be nearer the carbon tetrachloride source (Z-9 Trench) and wells added later will expand operations away from this source. Well 299-W15-8U will be prioritized for early addition to the mix of on-line wells.

The 200-PW-1 OU task lead organizes and maintains spreadsheets of the characterization data on a desktop computer. The characterization data are included in the annual performance evaluation report.

SOIL VAPOR EXTRACTION SYSTEM OPERATING PLAN AT THE
216-Z-1A, 216-Z-18, AND 216-Z-12 SITE
July 2005 – September 2005

Twenty-six wells at the 216-Z-1A, 216-Z-18, and 216-Z-12 site (Z-1A site) are identified for potential soil vapor extraction (Table 3). Selected wells will be prepared for potential hook-up to the soil vapor extraction system during July through September 2005.

The last non-operational soil vapor monitoring at Z-1A prior to SVE restart will take place in mid to late June 2005. At that time, any sampling tubes will be removed from potential on-line wells. The current wellhead assemblies (configured for non-operational soil vapor monitoring) will not be disturbed until the monitoring has been completed and the tubing removed.

Passive soil vapor extraction is being conducted at the following Z-1A wells with lower intervals open between the Cold Creek unit and groundwater: 299-W18-6L, 299-W18-7, 299-W18-10L, 299-W18-11L, 299-W18-12, 299-W18-246L, 299-W18-247L, 299-W18-252L (Table 4).

For initial start-up operations at Z-1A, extraction will be implemented at five planned intervals in the Z-1A tile field: 299-W18-165, 299-W18-166, 299-W18-167, 299-W18-168, and 299-W18-174 (Table 3) (Figure 1). Start-up operations in FY 2001, FY2002, FY 2003, and FY 2004 were also initiated using these five extraction intervals (a sixth interval selected in FY 2001 produced virtually no flow). Selecting the same set of initial wells will allow the rebound in FY 2005 to be compared to the rebound in previous years.

These five intervals will be characterized on the first day of operations. During continued operations, all on-line wells will be characterized each week and all off-line wells, if requested, will be characterized during the 2nd, 4th, 6th, 8th, 10th, and final weeks, according to the attached sampling and analysis plan (Table 3). As before, the mix of on-line wells will be periodically changed during operations, based on changing concentrations, extraction interval locations, and operating experience. In general, the initial extraction wells will be nearer the primary carbon tetrachloride source (Z-1A Tile Field) and wells added later will expand operations away from this source.

The 200-PW-1 OU task lead organizes and maintains spreadsheets of the characterization data on a desktop computer. The characterization data are included in the annual performance evaluation report.

VADOSE ZONE MONITORING PLAN FOR SOIL VAPOR EXTRACTION SITES April 2005 – September 2005

Non-Operational Monitoring and Passive Soil Vapor Extraction Monitoring

This plan describes planned non-operational monitoring and passive soil vapor extraction monitoring to be conducted during April through September 2005 for the 200 West Area Carbon Tetrachloride Expedited Response Action (200-PW-1 Operable Unit). Non-operational monitoring will be conducted at the 216-Z-1A/Z-18/Z-12 (Z-1A) site during April through June 2005 while the soil vapor extraction (SVE) system is operating at the 216-Z-9 (Z-9) site. Non-operational monitoring will be conducted at the Z-9 site during July through September 2005 while the SVE system is operating at the Z-1A site. Passive soil vapor extraction monitoring will be conducted at the Z-1A site from April 2005 through September 2005.

Scope: Monitor carbon tetrachloride soil vapor concentrations at selected probes and wells during non-operation of the soil vapor extraction (SVE) system (Tables 5 and 6). At any particular time, all of the probes and some of the wells will be "non-operational," i.e., they will not be connected to the SVE system. Eight of the non-operational wells have a passive soil vapor extraction system installed at the wellhead.

Passive soil vapor extraction is a remediation technology that uses naturally induced pressure gradients between the subsurface and the surface to drive soil vapor to the surface. In general, falling atmospheric pressure causes subsurface vapor to move to the atmosphere through wells, while rising atmospheric pressure causes atmospheric air to move into the subsurface. The passive soil vapor extraction systems will be used to remove carbon tetrachloride from the vadose zone.

Passive extraction wells will vent through aboveground canisters containing granular activated carbon (GAC). The wells will be monitored monthly using the sampling method used for the non-operational wells. The carbon tetrachloride vapor concentration will be monitored both upstream and downstream of the GAC. The measured vapor concentrations will be used to estimate the amount of carbon tetrachloride extracted through each well during the month.

For monitoring the non-operational probes and wells and the passive extraction wells, the components of this scope are:

- Collect soil vapor samples in accordance with GRP-EE-01-5.1
- Analyze soil vapor samples for carbon tetrachloride using the B&K in accordance with GRP-EE-05-4.0 at field screening level QC-1 (CP-A-QA-03-5.2)
- Evaluate concentration trends for the Fluor Hanford Waste Disposal/Groundwater Remediation Project
- Report results to 200-PW-1 Operable Unit Managers
- Include results in annual reports

Purpose and Objectives: The purpose of non-operational monitoring is to measure carbon tetrachloride concentrations in the vadose zone during the shutdown of the SVE system.

The objectives of monitoring the non-operational wells and probes are (1) to measure carbon tetrachloride concentrations and trends near the vadose-atmosphere and vadose-groundwater interfaces to evaluate whether non-operation of the SVE system is negatively impacting the atmosphere or groundwater; and (2) to be cognizant of carbon tetrachloride concentrations and trends near the lower permeability Cold Creek unit to provide an indication of concentrations that can be expected during restart of SVE operations and to support selection of on-line wells.

The objectives of monitoring the passive soil vapor extraction system wells, which are all open near the vadose-groundwater interface, are: (1) to measure carbon tetrachloride concentrations and trends near the vadose-groundwater interface; and (2) to quantify the mass of carbon tetrachloride removed using this technology.

Duration: Non-operational monitoring and passive soil vapor extraction monitoring will be conducted from April 2005 through September 2005 during FY 2005.

Monitoring Frequency: Monitoring will be conducted monthly.

Monitoring Locations: Locations were selected to focus carbon tetrachloride monitoring near the vadose-atmosphere and vadose-groundwater interfaces and near the Cold Creek unit (Table 5). These monitoring locations may be revised by the 200-PW-1 OU task lead based on developing trends, accessibility, and/or recommendations of the sampler. The 200-PW-1 Operable Unit Managers will be advised of any changes to the monitoring locations. Monitoring locations are shown on Figures 2 and 3.

Data Management: The field screening data obtained from non-operational wells and probes and passive extraction wells are entered into a controlled field logbook, which is maintained by Lockheed Martin Services Inc (LMSI) Records Information Management (RIM) department. The 200-PW-1 OU task lead organizes and maintains spreadsheets of the field screening data on a desktop computer. The field screening data are included in the annual performance evaluation report.

References:

CP-A-QA-03-5.2, *Quality Assurance Program Plans*, Procedure 5.2, "Onsite Measurements Quality Assurance Program Plan," Fluor Hanford, Inc., Richland, Washington.

GRP-EE-01-5.1, *Soil-Gas Sampling*, Fluor Hanford, Inc., Richland, Washington.

GRP-EE-05-4.0, *Analysis of Volatile Organic Compounds in Vapor Samples Using the Bruel and Kjaer 1301 and Innova 1312 Multi-Gas Analyzers*, Fluor Hanford, Inc., Richland, Washington.

Table 1. Wells Available for Soil Vapor Extraction System Operations at the 216-Z-9 Site, April through June 2005

| Potential On-Line Wells | Reason | Initial Wells |
|-------------------------|------------------------|---------------|
| 299-W15-6U | Mass removal | |
| 299-W15-6L | Groundwater Protection | |
| 299-W15-8U | Mass removal | |
| 299-W15-8L | Groundwater Protection | |
| 299-W15-9U | Mass removal | X |
| 299-W15-9L | Groundwater Protection | X |
| 299-W15-82 | Mass removal | X |
| 299-W15-84U | Mass removal | |
| 299-W15-84L | Mass removal | |
| 299-W15-85 | Mass removal | |
| 299-W15-86 | Mass removal | |
| 299-W15-95U | Mass removal | |
| 299-W15-95L | Mass removal | |
| 299-W15-216U | Mass removal | |
| 299-W15-216L | Groundwater Protection | |
| 299-W15-217 | Mass removal | X |
| 299-W15-218U | Mass removal | |
| 299-W15-218L | Groundwater Protection | |
| 299-W15-219U | Mass removal | |
| 299-W15-219L | Groundwater Protection | |
| 299-W15-220U | Mass removal | |
| 299-W15-220L | Groundwater Protection | |
| 299-W15-223 | Mass removal | |

Table 2. Sampling and Analysis Plan for Soil Vapor Extraction System Operations, April through September 2005

| When to Monitor | on-line wells | off-line wells | vacuum wellhead | flow | CCl4 | CHCl3 | CH2Cl2 | MEK |
|--|---------------|----------------|-----------------|------|----------------------|------------|--------------------|-----|
| | | | | | carbon tetrachloride | chloroform | methylene chloride | MEK |
| first day of operations | X | | X | X | X | X | X | X |
| beginning of 2nd week | X | X | X | X | X | X | X | X |
| beginning of 3rd week | X | | X | X | X | X | X | X |
| beginning of 4th week | X | X | X | X | X | X | X | X |
| beginning of 5th week | X | | X | X | X | X | X | X |
| beginning of 6th week | X | X | X | X | X | X | X | X |
| beginning of 7th week | X | | X | X | X | X | X | X |
| beginning of 8th week | X | X | X | X | X | X | X | X |
| beginning of 9th week | X | | X | X | X | X | X | X |
| beginning of 10th week | X | X | X | X | X | X | X | X |
| beginning of 11th week | X | | X | X | X | X | X | X |
| beginning of 12th week | X | | X | X | X | X | X | X |
| last day of operations | X | X | X | X | X | X | X | X |
| Fax copy of monitoring records to 200-PW-1 OU Task Lead (Virginia Rohay at 373-3974) by close of day following monitoring. | | | | | | | | |

Table 3. Wells Available for Soil Vapor Extraction System Operations at the 216-Z-1A/Z-18/Z-12 Site, July through September 2005

| Potential On-Line Wells | Reason | Initial Wells |
|-------------------------|--------------|---------------|
| 299-W18-6U | Mass removal | |
| 299-W18-89 | Mass removal | |
| 299-W18-93 | Mass removal | |
| 299-W18-94 | Mass removal | |
| 299-W18-96 | Mass removal | |
| 299-W18-97 | Mass removal | |
| 299-W18-98 | Mass removal | |
| 299-W18-99 | Mass removal | |
| 299-W18-152 | Mass removal | |
| 299-W18-153 | Mass removal | |
| 299-W18-157 | Mass removal | |
| 299-W18-158L | Mass removal | |
| 299-W18-159 | Mass removal | |
| 299-W18-163L | Mass removal | |
| 299-W18-165 | Mass removal | X |
| 299-W18-166 | Mass removal | X |
| 299-W18-167 | Mass removal | X |
| 299-W18-168 | Mass removal | X |
| 299-W18-169 | Mass removal | |
| 299-W18-171L | Mass removal | |
| 299-W18-174 | Mass removal | X |
| 299-W18-246U | Mass removal | |
| 299-W18-247U | Mass removal | |
| 299-W18-248 | Mass removal | |
| 299-W18-249 | Mass removal | |
| 299-W18-252U | Mass removal | |

Table 4. Passive Soil Vapor Extraction Wells at the 216-Z-1A/Z-18/Z-12 Site, FY 2005

| Passive Soil Vapor Extraction Wells | Reason |
|-------------------------------------|------------------------|
| 299-W18-6L | Groundwater Protection |
| 299-W18-7 | Groundwater Protection |
| 299-W18-10L | Groundwater Protection |
| 299-W18-11L | Groundwater Protection |
| 299-W18-12 | Groundwater Protection |
| 299-W18-246L | Groundwater Protection |
| 299-W18-247L | Groundwater Protection |
| 299-W18-252L | Groundwater Protection |

Table 5a. Distribution of Selected Monitoring Locations During Soil Vapor Extraction System Operations at the 216-Z-9 Site, April through June 2005

| Target Zone | Number of Monitoring Locations | | |
|--|--------------------------------|-----|-------|
| | Z-1A | Z-9 | Total |
| Near-surface (3-25 m below ground surface) | 11 | 3 | 14 |
| Cold Creek (25-45 m below ground surface) | 6 | 2 | 8 |
| Groundwater (50-65 m below ground surface) | 8 ^a | 0 | 8 |
| Total | 25 | 5 | 30 |

^a Eight available monitoring locations near the vadose/groundwater interface in the Z-1A area are being monitored as part of the passive soil vapor extraction system network.

Table 5b. Distribution of Selected Monitoring Locations During Soil Vapor Extraction System Operations at the 216-Z-1A/Z-18/Z-12 Site, July through September 2005

| Target Zone | Number of Monitoring Locations | | |
|--|--------------------------------|-----|-------|
| | Z-1A | Z-9 | Total |
| Near-surface (3-25 m below ground surface) | 5 | 9 | 14 |
| Cold Creek (25-45 m below ground surface) | 0 | 8 | 7 |
| Groundwater (50-65 m below ground surface) | 8 ^a | 5 | 12 |
| Total | 13 | 22 | 35 |

^a Eight available monitoring locations near the vadose/groundwater interface in the Z-1A area are being monitored as part of the passive soil vapor extraction system network.

Table 6a. Non-Operational Wells and Probes Selected for Monitoring During Soil Vapor Extraction System Operations at the 216-Z-9 Site, April through June 2005

| Target Zone | Z-9 | Depth (m) | Comment | Z-1A | Depth (m) | Comment |
|--------------|--------------------------|-----------|-----------------------|--------------------------|-----------|---|
| near-surface | CPT-28 40 ft (green) | 12 | farfield south of Z-9 | CPT-32 25 ft (green) | 8 | west of Z-1A |
| near-surface | CPT-21A 45 ft (green) | 14 | south of Z-9 | CPT-4E 25 ft (white) | 8 | north central in Z-1A/Z-18/Z-12 field |
| near-surface | CPT-9A 60 ft (blue) | 18 | farfield north of Z-9 | CPT-30 28 ft (green) | 9 | north of Z-18 (middle of Z-1A/Z-18/Z-12 field) |
| near-surface | | | | CPT-13A 30 ft (blue) | 10 | southeast of Z-1A |
| near-surface | | | | CPT-7A 32 ft (yellow) | 10 | farfield northeast of Z-1A |
| near-surface | | | | CPT-1A 35 ft (black) | 11 | west of Z-12 |
| near-surface | | | | CPT-33 40 ft (green) | 12 | between Z-18 and Z-12 |
| near-surface | | | | CPT-34 40 ft (green) | 12 | west of Z-18 |
| near-surface | | | | CPT-C3872 61 ft | 19 | east side of Z-1A |
| near-surface | | | | CPT-1A 68 ft (yellow) | 21 | west of Z-12 |
| near-surface | | | | CPT-32 70 ft (red) | 21 | west of Z-1A |
| Cold Creek | CPT-21A 86 ft (red) | 26 | south of Z-9 | 299-W18-152 | 31 | northwest corner of Z-12 |
| Cold Creek | CPT-28 87 ft (red) | 27 | farfield south of Z-9 | 299-W18-167 | 32 | within Z-1A |
| Cold Creek | | | | CPT-4F 109 ft (red) | 33 | north central in Z-1A/Z-18/Z-12 field |
| Cold Creek | | | | 299-W18-165 | 33 | within Z-1A |
| Cold Creek | | | | 299-W18-249 | 40 | northeast corner of Z-18 |
| Cold Creek | | | | 299-W18-248 | 40 | east side of Z-1A |
| ground-water | | | | 299-W18-247L* | 51 | southeast of Z-18 |
| ground-water | | | | 299-W18-246L* | 52 | west of Z-1A |
| ground-water | | | | 299-W18-252L* | 53 | middle of Z-1A/Z-18/Z-12 field |
| ground-water | | | | 299-W18-10L* | 55 | east side of Z-18 |
| ground-water | | | | 299-W18-7* | 60 | east side of Z-1A |
| ground-water | | | | 299-W18-11L* | 60 | within Z-18 |
| ground-water | | | | 299-W18-12* | 60 | within Z-18 |
| ground-water | | | | 299-W18-6L* | 63 | west side of Z-1A |

* Passive soil vapor extraction wells

Note: Colors refer to the color coding on the soil vapor probe tubing.

Table 6b. Non-Operational Wells and Probes Selected for Monitoring During Soil Vapor Extraction System Operations at the 216-Z-1A/Z-18/Z-12 Site, July through September 2005

| Target Zone | Z-9 | Depth (m) | Comment | Z-1A | Depth (m) | Comment |
|--------------|---------------------------------|-----------|--------------------------------------|--------------------------|-----------|---------------------------------------|
| near-surface | CPT-17 10 ft (blue) | 3 | southwest of Z-9 | CPT-4E 25 ft (white) | 8 | north central in Z-1A/Z-18/Z-12 field |
| near-surface | CPT-18 15 ft (white) | 5 | northwest of Z-9 | CPT-13A 30 ft (blue) | 10 | southeast of Z-1A |
| near-surface | CPT-16 25 ft (blue) | 8 | east of Z-9 | CPT-7A 32 ft (yellow) | 10 | farfield northeast of Z-1A |
| near-surface | CPT-27 33 ft (red) | 10 | southeast of Z-9 | CPT-1A 35 ft (black) | 11 | west of Z-12 |
| near-surface | CPT-21A 45 ft (green) | 14 | south of Z-9 | CPT-34 40 ft (green) | 12 | west of Z-18 |
| near-surface | CPT-9A 60 ft (blue) | 18 | farfield north of Z-9 | | | |
| near-surface | CPT-16 65 ft (red) | 20 | east of Z-9 | | | |
| near-surface | CPT-24 70 ft (green) | 21 | northwest of Z-9 | | | |
| near-surface | CPT-18 75 ft (red) | 23 | northwest of Z-9 | | | |
| Cold Creek | 299-W15-82 | 25 | east side of Z-9 | | | |
| Cold Creek | CPT-21A 86 ft (red) | 26 | south of Z-9 | | | |
| Cold Creek | CPT-28 87 ft (red) | 27 | farfield south of Z-9 | | | |
| Cold Creek | 299-W15-8U | 31 | southside of Z-9 | | | |
| Cold Creek | 299-W15-217 | 35 | southwest corner of Z-9 | | | |
| Cold Creek | CPT-24 118 ft (red) | 36 | northwest of Z-9 | | | |
| Cold Creek | 299-W15-220 SST/118 ft (red) | 36 | east of Z-9 | | | |
| Cold Creek | 299-W15-95L | 44 | north side of Z-9 | 299-W18-247L* | 51 | southeast of Z-18 |
| ground-water | 299-W15-220L 163 ft | 50 | east of Z-9 | 299-W18-246L* | 52 | west of Z-1A |
| ground-water | 299-W15-219L 175 ft | 53 | northwest of Z-9 | 299-W18-252L* | 53 | middle of Z-1A/Z-18/Z-12 field |
| ground-water | 299-W15-84L 180 ft | 55 | west of Z-9 | 299-W18-10L* | 55 | east side of Z-18 |
| ground-water | 299-W15-9L | 57 | 11 m from 299-W15-32 extraction well | 299-W18-7* | 60 | east side of Z-1A |
| ground-water | 299-W15-46 | 66 | southside of Z-9 | 299-W18-11L* | 60 | Within Z-18 |
| ground-water | | | | 299-W18-12* | 60 | Within Z-18 |
| ground-water | | | | 299-W18-6L* | 63 | west side of Z-1A |

* Passive soil vapor extraction wells

Note: Colors refer to the color coding on the soil vapor probe tubing.

Figure 1. Location of Extraction and Monitoring Wells at the 216-Z-1A/Z-18/Z-12 and 216-Z-9 Sites

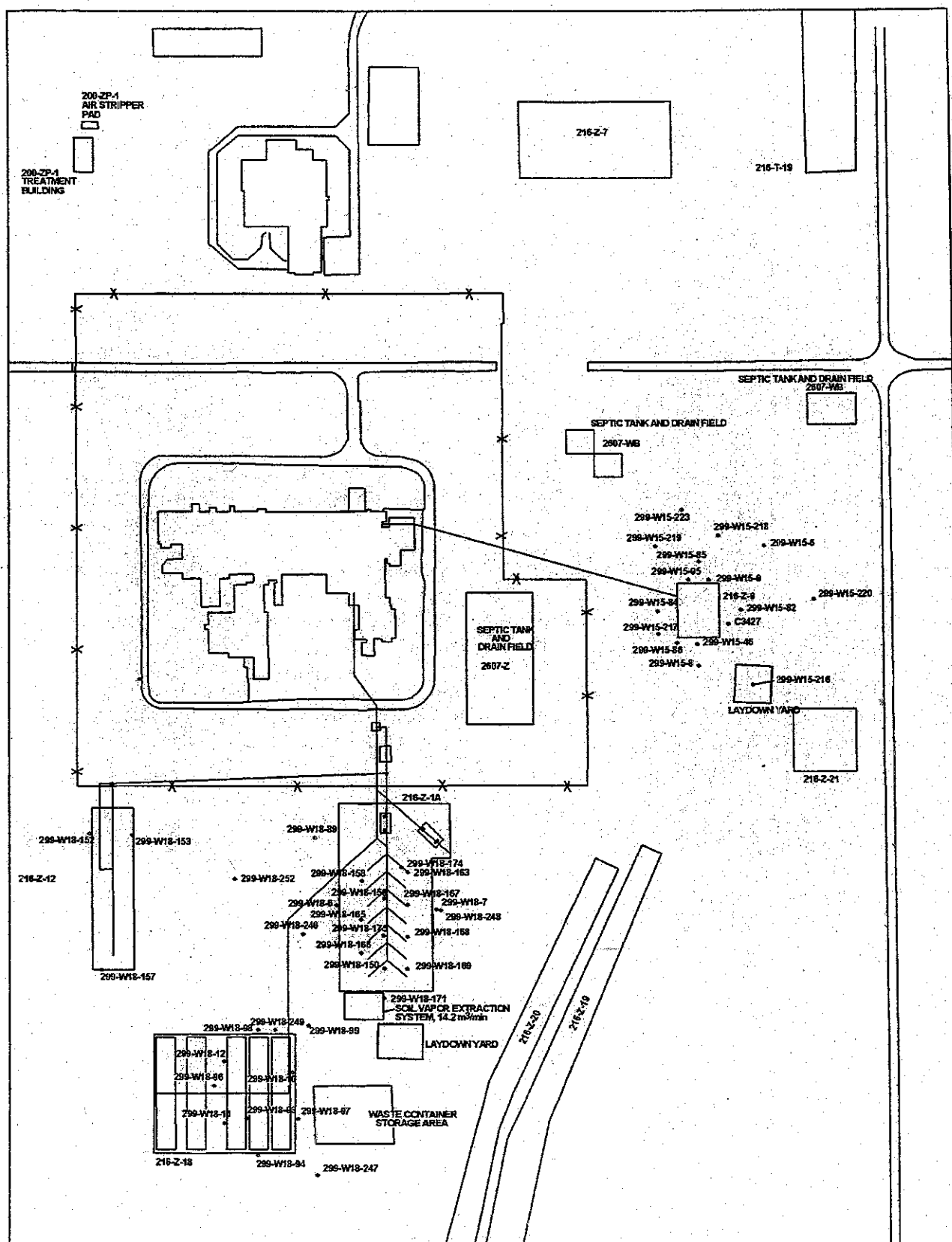


Figure 2. Location of Wells and Probes Selected for Non-Operational Monitoring and Passive Soil Vapor Extraction Monitoring, April through June 2004

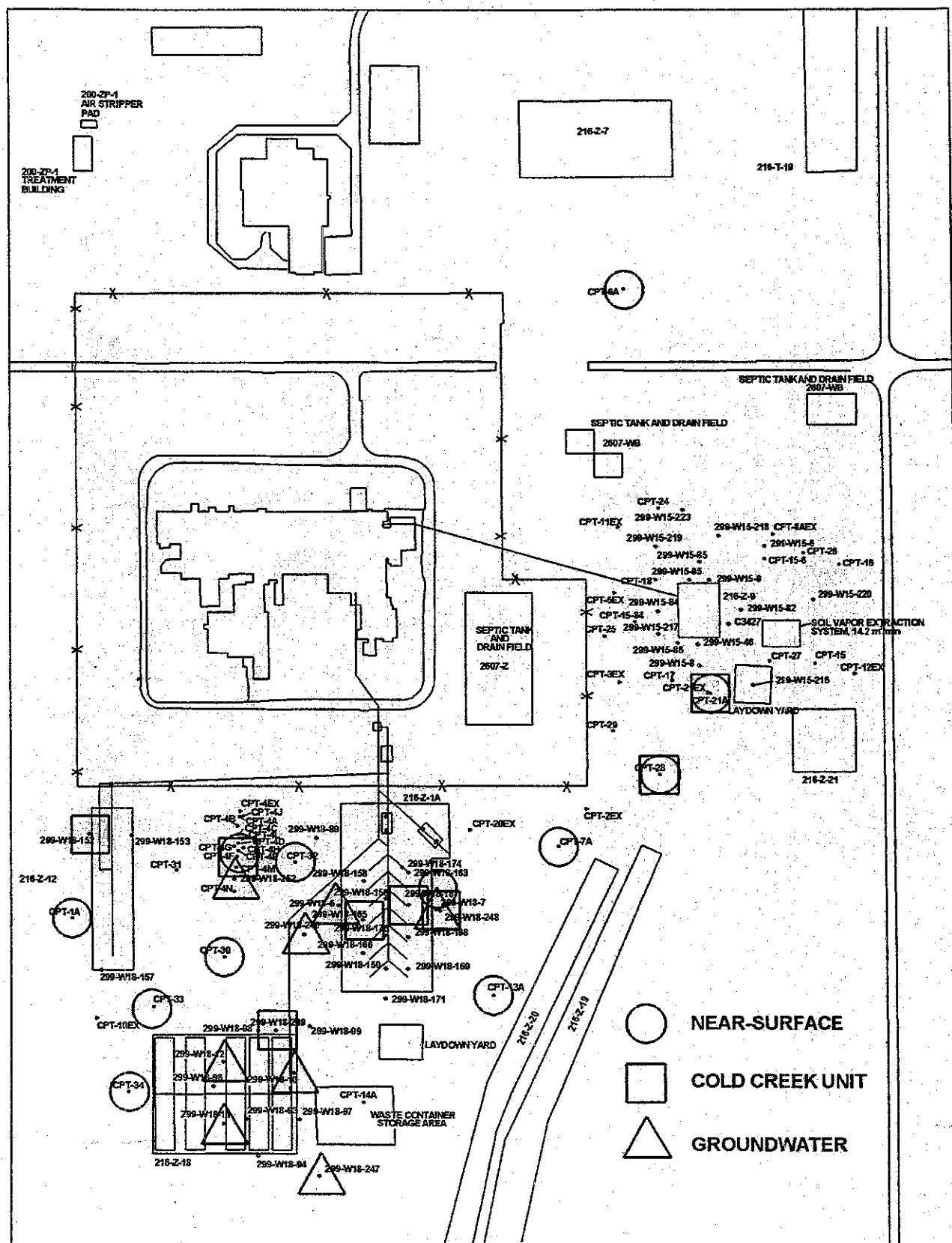
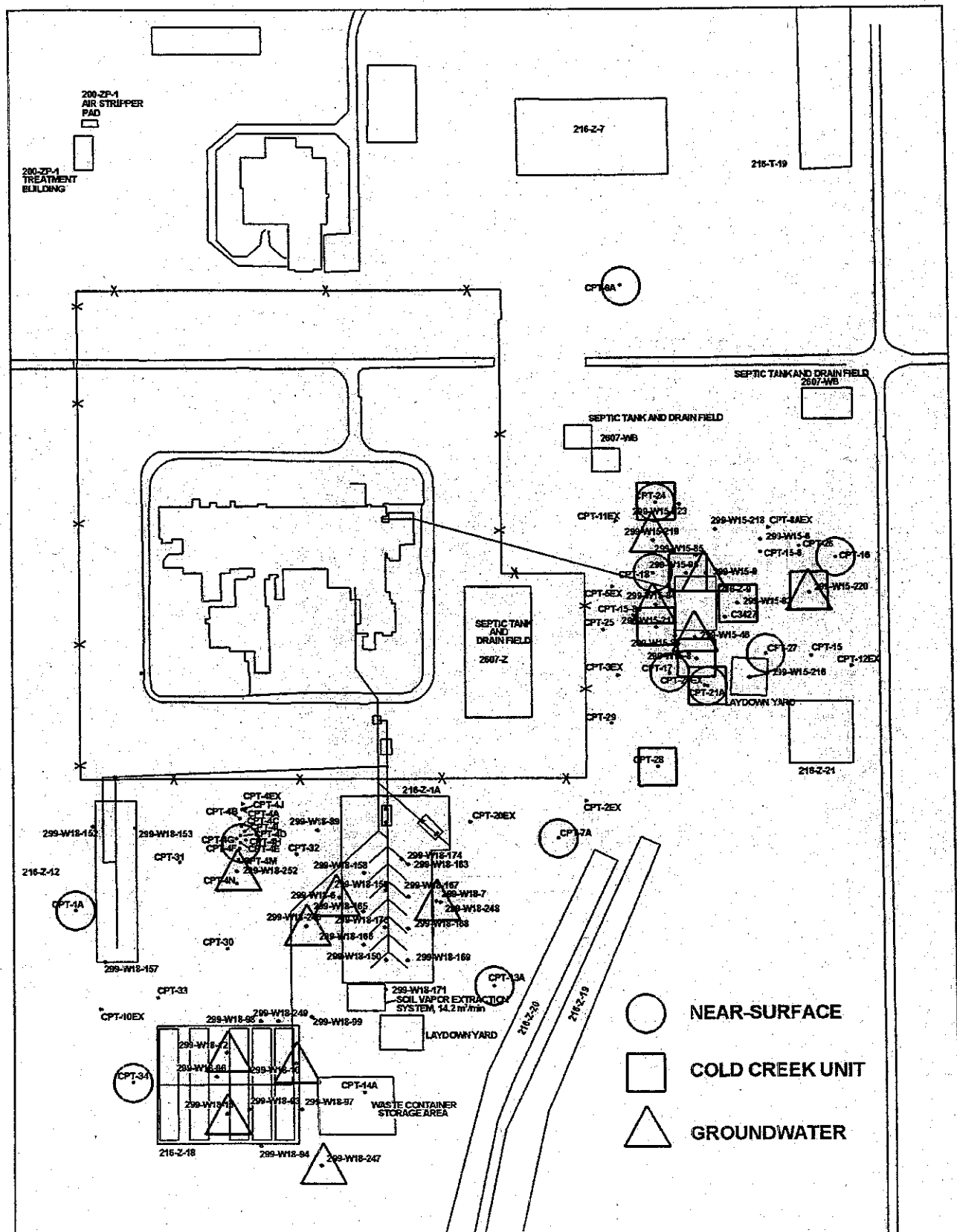
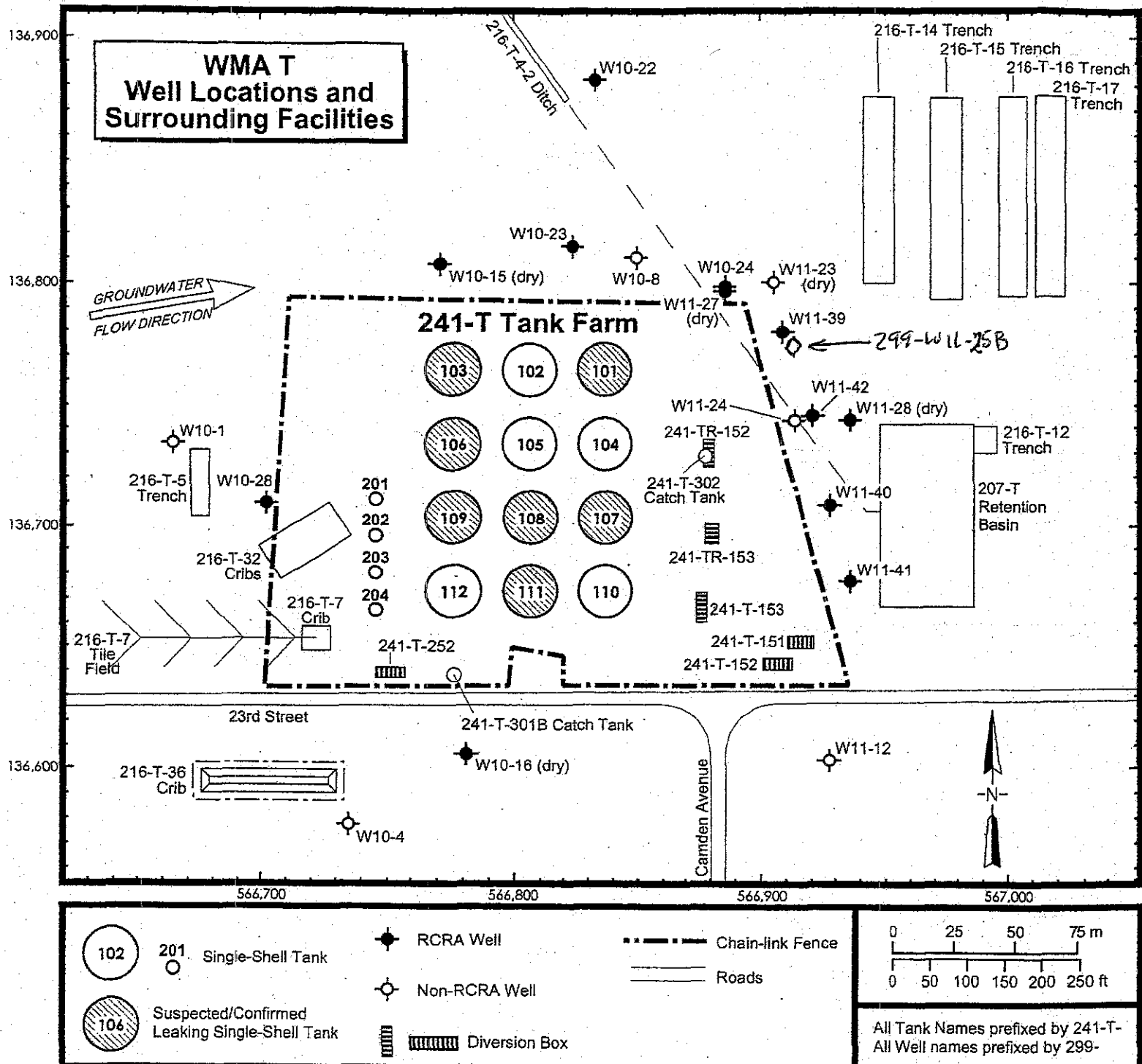


Figure 3. Location of Wells and Probes Selected for Non-Operational Monitoring and Passive Soil Vapor Extraction Monitoring, July through September 2004





Available technetium-99, chromium, nitrate, and carbon tetrachloride data from new well 299-W11-25B at WMA T.

| Sample Depth (ft bgs) | Depth Below Water Table (ft) | Sample Method | Tc-99 (pCi/L) | Cr (µg/L) | Nitrate (µg/L) | CCl ₄ (ug/L) |
|-----------------------|------------------------------|---------------|---------------|----------------------|----------------|-------------------------|
| 247 | 5 | Air lifted | 238 | < quantitation limit | 945,930 | |
| 250 | 8 | Air lifted | 13,073 | < quantitation limit | 799,420 | |
| 255 | 13 | Air lifted | 12,716 | < quantitation limit | 1,009,270 | |
| 260 | 18 | Pumped | 77,010 | 1,033 | 371,700 | 797 |
| 265 | 23 | Air lifted | 81,940 | 2.34 | 550,400 | |
| 270 | 28 | Air lifted | 140,080 | 1.95 | 585,940 | |
| 275 | 33 | Air lifted | 181,900 | 2.24 | 663,540 | |
| 280 | 38 | Pumped | 151,810 | 555 | 569,230 | 957 |
| 285 | 43 | Air lifted | 8,551 | | 579,880 | |
| 290 | 48 | Air lifted | 31,960 | | 404,030 | |
| 295 | 53 | Air lifted | 37,060 | | 410,390 | |
| 300 | 58 | Air lifted | 49,470 | | Not Analyzed | |
| 300 | 58 | Pumped | 54,740 | 63.7 | 426,810 | 1146 |
| 305 | 63 | Air lifted | 37,910 | 2.73 | 404,410 | |
| 310 | 68 | Air lifted | 30,770 | 4.04 | 354,520 | |
| 315 | 73 | Air lifted | 43,350 | 13.3 | 379,720 | |
| 320 | 78 | Pumped | 49,810 | 14.3 | 403,540 | 997 |
| 320 | 78 | Air lifted | 13,549 | non detect | Not Analyzed | |
| 325 | 83 | Air lifted | 39,950 | 1.46 | 410,420 | |
| 330 | 88 | Air lifted | 39,440 | <quantitation limit | 406,490 | |
| 335 | 93 | Air lifted | 29,580 | <quantitation limit | 399,490 | |
| 340 | 98 | Pumped | 42,330 | | 415,320 | 520 |
| 345 | 103 | Air lifted | 28,900 | <quantitation limit | 392,360 | |
| 350 | 108 | Air lifted | 25,500 | <quantitation limit | 418,610 | |
| 355 | 113 | Air lifted | 17,340 | 10 | 376,470 | |
| 360 | 118 | Air lifted | 11,492 | 13.5 | Not analyzed | 1253 1341 (Dup) |
| 360 | 118 | Pumped | 37,740 | 18.7 | 409,120 | |
| 365 | 123 | Air lifted | 30,000 | | 393,780 | |
| 370 | 128 | Air lifted | 26,860 | | 405,690 | |

| | | | | | | |
|-----|-----|------------|--------|--|---------|--|
| 375 | 133 | Air lifted | 15,674 | | 314,570 | |
| 380 | 138 | Pumped | 25,160 | | 334,980 | |
| 385 | 143 | Air lifted | 15,181 | | 275,400 | |
| 390 | 148 | Air lifted | 15,198 | | 260,110 | |
| 395 | 153 | Air lifted | 26,010 | | 366,380 | |
| 400 | 158 | Pumped | 30,770 | | 370,440 | |
| 405 | 163 | Air lifted | 13,022 | | 264,700 | |
| 409 | 167 | Air lifter | 12,121 | | 241,750 | |
| 409 | 167 | Pumped | 21,250 | | 374,480 | |

299-W11-25

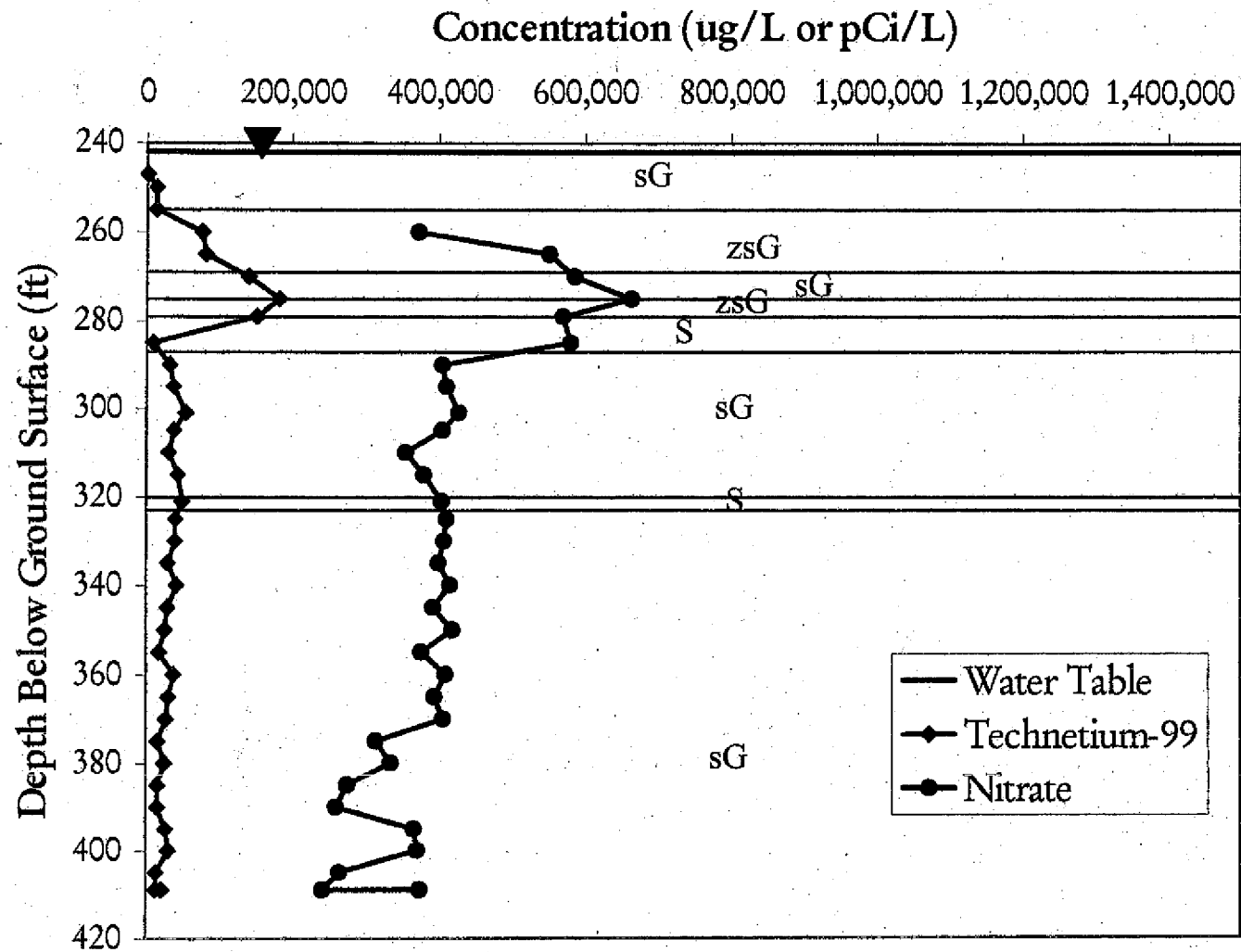
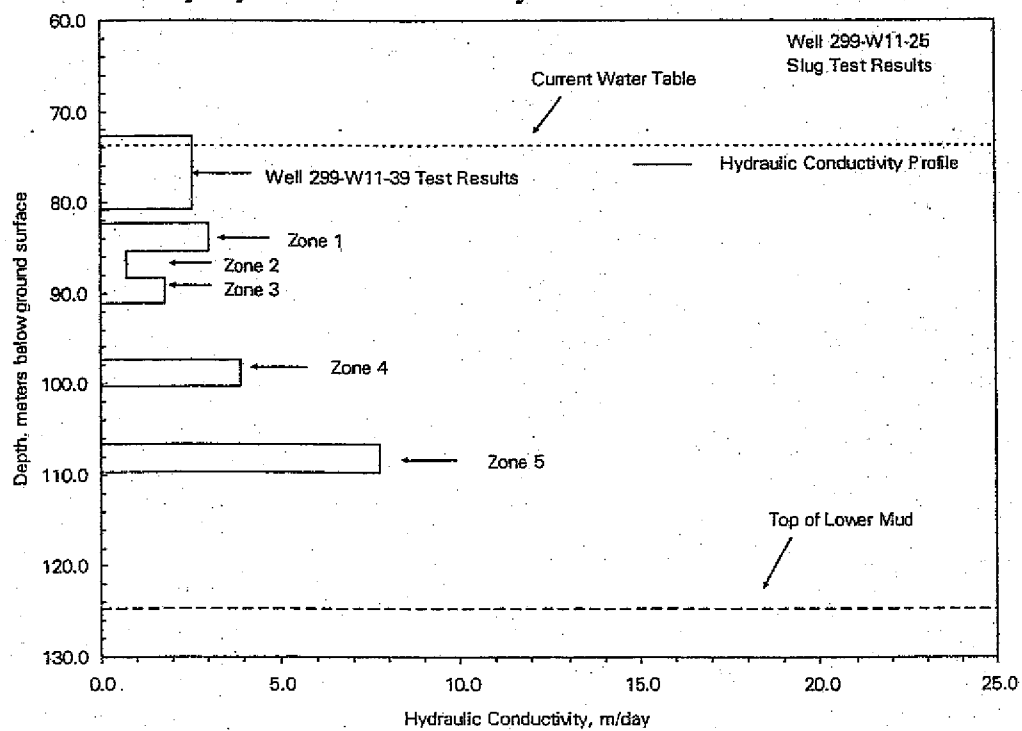


Figure 3. Preliminary Hydraulic Conductivity Profile at Borehole 299-W11-25B

**200 Area Unit Managers' Meeting
OPEN ACTION ITEMS & TRACKING**

| Action # | Action/Subject | Assigned To | Owed To | Assigned Date | Original Due Date | Adjusted Due Date | Date Complete | Status |
|----------|--|----------------|----------------|---------------|-------------------|-------------------|---------------|--|
| 36 | Review Modeling lessons learned from TW-1 for applicability to other OUs. Make best of data we have. Larry: Follow-on meeting. | Benecke | | | | | | A formal fix is in progress. RL/EPA & Ecology met to collect input to address regulatory agency concerns. J. Morse to provide summary @ Nov. UMM |
| 37 | Foley suggests Larry/Mike to talk to Bill McMahan. Dual porosity not done. Ecology agreed with EPA that the current modeling is not acceptable. Opportunity to use dual porosity to help guide that. | FH | RL | 09/16/04 | | | | |
| 38 | All agencies to provide written notification and who is designee when unable to attend. | RL/EPA/Ecology | RL/EPA/Ecology | | | | Ongoing | Requirement per TPA |
| 39 | Review/Approve Decommissioning List for UP-1 | Ecology DOE/FH | | 01/20/05 | | | | |
| 40 | Review/Approve Decommissioning List for ZP-1 | EPA | | 01/20/05 | | | | |
| 41 | Reconstruct Agreements for ZP-1 Expansion | Mark Byrnes | DOE-RL | 01/20/05 | 02/17/05 | | | |
| 42 | Set up COPC meeting | Stuart Lutrell | FH/RL | 01/20/05 | before 02/17/05 | | | |
| 43 | Develop charter for ROD strategy to discuss at next UMM | RL | EPA/Ecology | 01/20/05 | 02/17/05 | | | |
| 44 | Complete UMM minutes per plan presented at January UMM | FH/RL | EPA/Ecology | 01/20/05 | 02/17/05 | | | |
| 45 | Provide a list of issues concerning combining 200-CW-1 and 200-CS-1 FS | Ecology | FH/RL | 01/20/05 | 02/17/05 | | | Complete |
| 46 | Enter signed 200-UP-1 Rebound Study Operating Plan into the meeting minutes | | | 01/20/05 | | | 1/20/2005 | Attachment 10 to 01/2005 UMM minutes |
| 47 | Approve decommissioning lists | Ecology/EPA | RL/FH | 01/20/05 | 02/17/05 | | | Attachment 6 to 01/2005 UMM minutes |
| 48 | Provide a 200-BP-5 schedule and an updated 200-P-1 schedule to regulatory agencies | PNNL/RL | EPA/Ecology | 02/17/05 | 03/17/05 | | | |

200 Area Unit Managers' Meeting

OPEN ACTION ITEMS & TRACKING

[illegible]